Planned updates to JTWC prognostic reasoning messages
*** Effective: 21 June 2021 at 0000Z ***

Q1: What are the changes?

A1: JTWC will extend prognostic reasoning messages to accompany all TC warnings in the western North Pacific, South Pacific, North Indian and South Indian Ocean forecast basins. Additionally, JTWC has redesigned the prognostic reasoning message to provide additional analysis information, improve readability, increase standardization and present reliable assessments of analysis and forecast confidences.

Q2: Why is JTWC implementing these changes?

A2: Extending prognostic reasoning messages to all forecast basis will enable JTWC to provide its customers standardized, high-quality support across the organization's area-or-responsibility. Changes to the message format were requested by JTWC customers, and developed and reviewed by JTWC forecasters and staff. The new format makes it easier for the user both to quickly extract key forecast information and to obtain a thorough understanding of the forecast through detailed reading.

Q3: What specific information will the new prognostic reasoning messages include?

A3: The initial portion of the prognostic reasoning messages through paragraph “1. FOR METEOROLOGISTS.” will remain the same. The 6 hour summary and analysis and forecast discussion sections will change.

The 6 hour summary and analysis section will provide the following information:

- Summary: Initial position, initial intensity, geographic reference, past six hour motion and significant wave height
- Satellite, position and intensity discussion
- Initial wind radii basis (as applicable)
- Current steering mechanism
- Agency Dvorak and automated intensity estimates (as applicable)
- Environmental assessment: Forecaster characterization, vertical wind shear, sea surface temperature and outflow
- Analysis confidences: Position, intensity and wind radii

The forecast discussion section will provide the following information:

- Significant forecast changes (as applicable)
- Forecast discussion
- Model discussion (key points)
- Forecast confidences: 0-72 hour track forecast, 72-120 hour track forecast (as applicable), 0-72 hour intensity forecast and 72-120 hour intensity forecast (as applicable)

Q4: What are the valid times for prognostic reasoning messages?

A4: Synoptic time plus three hours (0300Z, 0900Z, 1500Z or 2100Z) in all supported basins.

Q5: What are the WMO Manual of Operations (MANOP) message prefixes for the updated prognostic reasoning messages?

A6: WDPN – western North Pacific; WDPS – South Pacific; WDIO – North Indian; WDXS – South Indian

Q6: Are there any examples of the prognostic reasoning message in the new format?

A6: Yes! The remaining portion this document provides an example of the prognostic reasoning message in the new format.

New prognostic reasoning message format: 6 hour summary and analysis section

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WDPN31 PGTW 152100
MSGID/GENADMIN/JOINT TYPHOON WRNCEN PEARL HARBOR HI//
SUBJ/PROGNOSTIC REASONING FOR TYPHOON 02W (SURIGAE) WARNING NR 10//
RMKS//
1. FOR METEOROLOGISTS.
2. 6 HOUR SUMMARY AND ANALYSIS.

SUMMARY:
   INITIAL POSITION: 8.6N 135.2E
   INITIAL INTENSITY: 65 KTS
   GEOGRAPHIC REFERENCE: 42 NM NORTHEAST OF KAYANGEL
   MOVEMENT PAST 6 HOURS: WSW AT 05 KTS
   SIGNIFICANT WAVE HEIGHT: 21 FEET

SATELLITE, POSITION AND INTENSITY DISCUSSION: ANIMATED ENHANCED INFRARED
SATELLITE IMAGERY SHOWS CENTRAL COLD COVER CONTINUING TO BUILD UP DIRECTLY
OVER THE LOW-LEVEL CIRCULATION CENTER (LLCC), COMPLETELY OBSCURING THE
POSITION OF THE LLCC. ANIMATED WATER VAPOR IMAGERY SHOWS OUTFLOW ALOFT
CONTAINED TO THE WESTERN SEMICIRCLE, WITH SOME PRESSURE IN THE OUTFLOW LAYER
ON THE EASTERN SIDE OF THE STORM. THE INITIAL POSITION IS PLACED WITH HIGH
CONFIDENCE BASED ON A 151659Z AMSR2 37GHZ IMAGE THAT REVEALS A CLEAR
MICROWAVE EYE. THE INITIAL INTENSITY OF 65 KNOTS IS BASED ON THE DVORAK
CURRENT INTENSITY ESTIMATES OF T4.0 (65 KNOTS) BY PGTW, RJTD AND KNES AND AN
ADVANCED DVORAK TECHNIQUE ESTIMATE OF 61 KNOTS.

INITIAL WIND RADII BASIS: OBJECTIVE BEST TRACK

CURRENT STEERING MECHANISM: EXTENSION OF THE DEEP STR TO THE NORTH

AGENCY DVORAK AND AUTOMATED FIXES:
   PGTW: T4.0 - 65 KTS
   RJTD: T4.5 - 77 KTS
   KNES: T4.0 - 65 KTS
   CIMSS ADT: 61 KTS AT 1200Z

FORECASTER ASSESSMENT OF CURRENT ENVIRONMENT: FAVORABLE
   VWS: 10-15 KTS
   SST: 29-30 CELSIUS
   OUTFLOW: MODERATE WESTWARD

ANALYSIS CONFIDENCE:
   INITIAL POSITION: HIGH
   INITIAL INTENSITY: HIGH
   INITIAL WIND RADII: MEDIUM
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Primary storm analysis data

Key features discussion (satellite imagery, position, intensity, wind radii, steering)

Supplemental analysis data and confidences

New prognostic reasoning message format: Forecast reasoning section

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3. FORECAST REASONING.

SIGNIFICANT FORECAST CHANGES: THERE IS NO CHANGE TO THE FORECAST PHILOSOPHY
SINCE THE PREVIOUS PROGNOSTIC REASONING MESSAGE.

FORECAST DISCUSSION: TY 02W IS FORECAST TO GRADUALLY TRANSITION TO A
NORTHWESTWARD TRACK AS A MIDLATITUDE TROUGH DIGS IN, BREAKING THE EXTENSION
OF THE STR, AND ALLOWING TY 02W TO TRACK TOWARD THIS WEAKNESS IN THE STR. THE
SYSTEM WILL STEADILY INTENSIFY AS THE PRESSURE ON THE EASTERN SIDE GRADUALLY
SUBSIDES, LEADING TO ROBUST, DUAL CHANNEL OUTFLOW WILL SIGNIFICANTLY IMPROVE
THE ENVIRONMENT FOR DEVELOPMENT, WITH TY 02W REACHING 95KTS BY TAU 48 AND
115KTS BY TAU 72. AFTER TAU 72, THE BREAK IN THE STR RESULTS IN THE STR TO
THE EAST TAKING OVER AS THE PRIMARY STEERING MECHANISM, SENDING TY SURIGAE
POLEWARD AS IT TRACKS AROUND THE WESTERN PERIPHERY OF THIS RIDGE. THE
ENVIRONMENTAL CONDITIONS WILL BECOME SLIGHTLY LESS FAVORABLE AS THE AMOUNT OF
UPPER-LEVEL DIVERGENCE DECREASES AND SEA SURFACE TEMPERATURES LOWER THROUGH
THE END OF THE FORECAST PERIOD. THE SYSTEM WILL DECREASE DOWN TO 100KTS BY
TAU 120.

MODEL DISCUSSION: NUMERICAL MODEL GUIDANCE HAS SPREAD SLIGHTLY OVER THE PAST
SIX HOURS, AND NOW INDICATES A POSSIBLE SOUTHWESTWARD DIP PRIOR TO POLEWARD
CURVATURE THAT WAS NOT PRESENT IN PREVIOUS FORECASTS. CROSS-TRACK SPREAD OF
180NM AT TAU 72, WITH THE ECMWF AND ECMWF ENSEMBLE MEAN TRACKING THE SYSTEM
FURTHER WEST BEFORE RECURVING AND JGSM RECURVING MORE ABRUPTLY. NUMERICAL
MODEL CROSS-TRACK SPREAD INCREASES TO 290NM AT TAU 120. THE JTWC FORECAST IS
PLACED NEAR THE MULTI-MODEL CONSENSUS, WHICH HAS BEEN RELIABLY STEADY OVER
THE PAST SEVERAL CYCLES.

FORECAST CONFIDENCE:
   TRACK 0 - 72 HR: MEDIUM
   TRACK 72-120 HR: LOW
   INTENSITY 0 - 72 HR: MEDIUM
   INTENSITY 72-120 HR: MEDIUM//
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Forecast discussion (changes, general discussion, model discussion)

Forecast confidences